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Abstract of DE19724591

A valve arrangement, used between two sections (12,14) of a flexible container (10), comprises a compressible, lens shaped frame (28) with rib elements which run from the frame to a central separation plane. The rib elements are spaced apart by a distance (a) and are covered by a membrane. The membrane (36) has a connection seam which runs parallel to the ribs and forms a defined weak point. The valve is of plastics, preferably polypropylene.

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The invention relates to a Aufbrech Ventileinrichtung from plastic material to the arrangement between two compartments of a flexible container, whereby the compartments for from each other different liquids, especially. Infusion liquids, are intended, and whereby the valve mechanism exhibits a compactible, lense-shaped framework and from the framework to a centric interface level inward standing, against each other laterally shifted rib elements, and whereby furthermore the rib elements exhibit from each other laterally a spacing, which is bridged by a Membranelement planned in the interface level, as well as methods to the production of such Aufbrech Ventileinrichtung.

A Aufbrech Ventileinrichtung of the type specified above is well-known from the DE 42 22 049 C2. During this well-known valve mechanism the two by the framework inward standing rib elements are so intended that its back surfaces lie in a common level, D. h. with one another aligning. The two rib elements are there trained at their from the framework removed final section with a slant in each case and connected by means of a connecting section thin-walled compared with the rib elements. By squeezing the framework together the thin-walled connecting section is cuttable. After the two rib elements with their back surfaces lie with one another aligning in one level, it can be problematic to cut the thin-walled connecting section by squeezing the framework together. Therefore is also suggested there providing one of the two rib elements with a gumption knife blade. This formation specified last is however relatively cost-intensive. Results from the necessity for the availability of the gumption knife blade and especially. from the assembly the same at the one of the two rib elements.

From US 29 32 385 is well-known to form the separating element from two plastic situations which agree chemical, however in their physical orientation are different, so that they are connected with one another only easy ones, whereby a defined weak point screen end plastic napkin seam develops. The interface is opened by tearing open of the two plastic situations.

The invention is the basis the object to create a Aufbrech valve mechanism of the type initially specified as well as method to their production whereby it is simple and low-priced possible, very reliably functioning, D. h. to create strength-saving aufbrechbare valve mechanisms of the type initially specified.

This object is solved during a Aufbrech Ventileinrichtung of the type initially specified according to invention by the fact that the Membranelement is trained in its middle region with parallel to the two rib elements at least approximately a running, a defined weak point forming plastic napkin seam of two injection moulding stream.

While with the production by plastic articles such undesired weak points representing bind-stitched are usually avoided, during the breaking open valve mechanism according to invention laterally the rib elements from each other beabstandeten bridging and compared with the rib elements a very small wall thickness possessing Membranelement purposeful with such a plastic binding seam is trained. By squeezing the lense-shaped framework together it is simply, reliable and with small energy expenditure possible to isolate and open the Aufbrech Ventileinrichtung along the plastic napkin seam of the Membranelementes.

Around the Aufbrech Ventileinrichtung according to invention simply, D. h. in a simply arranged spraying mold tool with simply arranged pushers to realize to be able, it is appropriate, if the Membranelement with the interface level includes a small releasing from form angle.

It is preferential to make the valve mechanism according to invention of polypropylene (PP) because it turned out that PP is physiologically harmless.

A further, completely substantial advantage of the Aufbrech Ventileinrichtung according to invention consist of it that with the disruption along the plastic binding seam a detachment trained in the Membranelement is avoided by particles of the membrane, what meant that the infusion liquids remain reliably particle-free and otherwise pure.

According to invention methods to production according to invention Aufbrech Ventileinrichtung can thereby characterized to be that the valve mechanism by two within the frameworks leading into, which become both rib elements, which are beabstandeten from each other laterally, assigned sprues from plastic material manufactured, whereby those flow together the two sprues of assigned plastic material stream into the two laterally rib elements connected Membranelement from each other beabstandeten under formation of a plastic napkin seam and train

thus in the Membranelement an appropriate plastic napkin seam, which forms a defined weak point. To the purposeful formation some defined in the original state close weak point forming plastic napkin seam will the plastic spraying pressure in dependence of the plastic material arriving at the application and in dependence of the wall thickness of the framework, the rib elements and the wall thickness of the Membranelementes suitably set, in order to realize the one defined weak point representing plastic napkin seam in the middle region of the Membranelementes.

With the method according to invention with two, the two rib elements assigned sprues, described above, it is preferential, if the two sprues with the same casting pressure are subjected, in order to train the plastic napkin seam in the middle region of the Membranelementes.

Another possibility of the implementation of the Aufbrech Ventileinrichtung according to invention exists procedure in accordance with in the fact that the valve mechanism becomes manufactured by a only one sprue, which is assigned the two laterally rib elements from each other beabstandeten to connected Membranelement leading into in the frameworks, whereby in the Membranelement by a flowing around neighbouring to the sprue resistance a plastic napkin seam is trained. The mentioned flowing around resistance is bspw. in an educated manner by a spike, which in-stands into the Membranelement corresponding the form cavity portion of the appropriate spraying mold tool defined, without perforating the Membranelement however. Downstream behind the flowing around resistance the two material stream of the plastic material outgoing from the only sprue flow together under formation of the plastic napkin seam again.

As was already mentioned, it is preferential, if the Aufbrech Ventileinrichtung according to invention becomes from PP manufactured. If necessary also different suitable plastic materials can as bspw. PL (PE) o. such. at the application arrive.

The description two compartments of an exhibiting container in shape of an infusion bag, a formation of the Aufbrech Ventileinrichtung according to invention as well as schematic illustrations of methods according to invention follows to the production of Aufbrech Ventileinrichtungen according to invention.

Show:

Fig. 1 in a profile a formation of a flexible container with two compartments for from each other different infusion liquids, whereby between the two compartments a Aufbrech valve mechanism is intended,

Fig. 2 a cut along the cut line II-II in Fig. 1 by the Aufbrech Ventileinrichtung,

Fig. 3 in an increased ruler a cut along the cut line III III in Fig. 1 by the Aufbrech Ventileinrichtung and by in sections drawn the container and/or. the two from each other by the Aufbrech valve mechanism of separated compartments of the flexible container,

Fig. 4 a side view of the Aufbrech Ventileinrichtung in combination with two sprues (not drawn) of a plastic of forming tool to the implementation of the Aufbrech valve mechanism, suggested in sections,

Fig. 5 one the Fig. 4 appropriate illustration in viewing direction of the arrow V in Fig. 4 for the elucidation of the allocation of the two sprues to the rib elements of the Aufbrech Ventileinrichtung,

Fig. 6 a cut along the cut line VI-VI in Fig. 4 by the Aufbrech Ventileinrichtung for the elucidation of the two from each other laterally beabstandeten rib elements and for the elucidation the rib elements of connected Membranelementes,

Fig. 7 in an increased ruler the detail VII in Fig. 6 for elucidation especially. the Membranelementes and in the Membranelement the trained, a defined weak point forming plastic napkin seam,

Fig. 8 in sections cut a moulding tool with two sprues, like it also in Fig. 4 and 5 is represented, to the formation of the plastic binding seam in the middle region the two rib elements of the Aufbrech Ventileinrichtung of connected Membranelementes, according to the cut line VIII VIII in Fig. 9,

Fig. 9 one the Fig. 6 similar cross sectional view of the Aufbrech Ventileinrichtung,

Fig. 10 one in sections cross sectional view of another moulding tool to the implementation of a Aufbrech Ventileinrichtung according to invention, whereby the mentioned moulding tool exhibits only one sprue, and

Fig. 11 a cut along the cut line XI-XI in Fig. to train 10 as the elucidation the Membranelement directly assigned of the sprue, whereby a flowing around resistance is assigned to the sprue, in order behind this in the Membranelement purposeful, a defined weak point representing, plastic binding seam, like it in Fig. 10 is graphically represented.

Fig. 1 shows lengthwise-cut a flexible container 10, which is designed as infusion bags. The container 10 exhibits two from each other separated compartments 12 and 14. The compartments 12 and 14 are in the original state of the container 10 16 from each other separated by a Aufbrech Ventileinrichtung. The container 10 and/or. the upper compartment 12 is 18 closely sealed by means of a sealing, which is provided with a hanging up mechanism 20. The lower compartment 14 is 22 closely sealed by a catch mechanism, which exhibits a connection pipe connecting piece 24, which is interiorlaterally sealed by a membrane 26. The membrane 26 is durchstechbar.

As from Fig. , exhibits the Aufbrech valve mechanism 16 of the container 10 a lense-shaped framework 28 is evident to 2. The Fig. it clarifies 3 that from the lense-shaped framework 28 two rib elements 30 stand inward. The rib elements 30 extend up to a centric interface level 32, it are against each other laterally transferred, D. h.

they exhibit from each other a defined lateral spacing A. The interior ends of 34 of the rib elements 30 removed from the lense-shaped framework 28 are connected by means of a Membranelementes 36 einstückig, as also from the Fig. is evident to 6, 7 and 9. From the figures it is also evident that the Membranelement 36 is intended in the interface level 32 the Aufbrech Ventileinrichtung 16. Clarifies especially, the Fig. 7 that the Membranelement 36 with the centric interface level 32 suggested by a thin dash-dotted line includes a small releasing from form angle e. The Fig. 7 and the Fig. in addition 8 and 10 clarifies that compared with the rib elements 30 the Membranelement 36 with parallel to the two rib elements 30 at least approximately running, a defined weak point forming plastic napkin seam 38, possessing a small wall thickness, is trained. To the implementation of the plastic napkin seam 38 a method can be used, like it bspw. into the Fig. 4, 5 and 8, or a method is graphically clarified, like it in the Fig. 10 and 11 is represented. In the method first mentioned a spraying mold tool 42 comes to the application, like it into Fig. 8 is suggested in sections. This spraying mold tool 42 points two sprues 44 and 46 to (see. the Fig. 4, 5 and 8), whereby the sprue 44 is assigned to rib element 30 and the second sprue 46 the second rib element 30 beabstandeten laterally of it. The two sprues 44 and 46 flow to appropriate portion of the form cavity of the spraying mold tool 42 in the lense-shaped framework 28. The two sprues 44 are so intended that the plastic material stream in that flow together the two laterally rib elements 30 connected thin-walled Membranelement 36 plastic binding seam 38 forming from each other beabstandeten under formation of the one defined linienförmige weak point. This flowing together is in Fig. 8 by the arc-shaped lines 47 suggested.

As was mentioned already further above, the Fig clarifies. 10 and 11 a second procedure variant to the implementation of a Aufbrech Ventileinrichtung 16. Here a spraying mold tool 48 comes to the application, which exhibits only one sprue 50. This only sprue 50 flows to far centric interface level 42 into the lense-shaped framework 28 mentioned above in that externallaterally, D. h. this only sprue 50 is assigned directly to the cavity section for the Membranelement 36. In these in Fig. 11 cavity section designated with the reference numeral 52 stands bspw. flowing around resistance 56 inside, formed by a stylus or a spike 54. With the injection moulding of the appropriate plastic material by the only sprue 50 into the spraying mold tool 48 inside the original river of the plastic at the flowing around resistance 56, drawn by the arc-shaped lines 58, is divided into two equal partial flows, those into Fig. are represented to 10 by the arc-shaped lines 60 and at that approximately the straight-line plastic napkin seam 38 under formation of a defined, approximately straight-line weak point flow together.

The Aufbrech Ventileinrichtung 16 is squeezed together, which in Fig. 2 by the two each other turned arrows 62 is suggested, then the Membranelement 36 the Aufbrech valve mechanism 16 is broken open along the plastic napkin seam 38 forming the defined weak point.